Conference Abstract

Notes of Life: A platform for recording species observations driven by artificial intelligence

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Abstract

Biodiversity research is stepping into a big data era with the rapid increase in the abundance of biodiversity data, especially the large number of species images. It has been a new trend and hot topic on how to utilize artificial intelligence to mine big biodiversity data to support wildlife observation and recognition. In this research, we integrate large numbers of species images, including higher plants, birds and insects, and use a state-of-the-art image deep learning technique to train species auto-recognition models. Currently, we get a model that can recognize more than 900 Chinese birds with top 1 accuracy 81% and top 5 accuracy 95% (top n accuracy means the probability that the correct answer presents in top n predicted results), and more models are coming soon. Based on these models, we developed a platform named Notes of Life (NOL, http://nol.especies.cn), which includes a website and a mobile application (app) for assisting biological scientists and citizen scientists to recognize and record wildlife. Users can upload their observation records and images of wildlife through our mobile app while they are investigating in the wild. The website is used for bulk data uploading and management. Species images can be classified by taxon-specific, plug-in recognition models that speed up the process of identification. There is an expert module in NOL where citizen scientists can work interactively with information provided by biological scientists, and post a species image identification request to experts when they cannot recognize the species by themselves or from models. The expert module is for improving the quality of citizen science data, and it is a supplement of the disadvantage of species auto-recognition models. Above all, NOL embraces the idea that scientific research supports citizen science and citizen science

gives feedback to science, and of finding a sustainable way to collect increasingly more reliable data for biodiversity research.

Keywords

biodiversity data, deep learning, species recognition, citizen science

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